Executive Office of Environmental Affairs

Massachusetts Office of Technical Assistance

# OTA Advisory

## Converting Lead Content to Lead Compound Content

It has been brought to OTA's attention that some MSDSs and other content information for products containing lead compounds only show lead content. The following table and example calculation are provided to assist facilities with calculating their lead compound usage when they are only provided with the concentration of lead.

The conversion factors were determined by dividing the molecular weight of the lead by the total molecular weight of the compound, and then taking the inverse of this value (1/value).

If your facility was provided with the concentration of the lead compound but not the lead, then divide by the factor provided in the table. Remember that the lead content of the waste stream must be reported as a lead metal.

Some suppliers may not be willing to divulge the identity of the lead compound being used. In order to calculate the lead content, they need to report the amount of lead, the number of equivalents of lead, and the total molecular weight of the compound.

| Lead Compound | Formula* | Conversion Factor |
|---|---|---|
| dibasic lead phthalate | $2\ PbO{\bullet}Pb(OOC)_2C_6H_4$ | 1.32 |
| tetrabasic lead fumarate | $4\ PbO{\bullet}PbC_2H_2(COO)_2{\bullet}2H_2O$ | 1.21 |
| tribasic lead sulfate | $3\ PbO{\bullet}PbSO_4{\bullet}H_2O$ | 1.20 |
| tetrabasic lead sulfate | $4\ PbO{\bullet}PbSO_4{\bullet}{}^1/_4H_2O$ | 1.16 |
| dibasic lead phosphite | $2\ PbO{\bullet}PbHPO_3{\bullet}{}^1/_2H_2O$ | 1.19 |
| dibasic lead phosphite sulfite | $4\ PbO{\bullet}PbHPO_3{\bullet}PbSO_3{\bullet}{}^1/_2H_2O$ | 1.19 |
| dibasic lead stearate | $2\ PbO{\bullet}Pb(OOC{\bullet}C_{17}H_{35})_2$ | 1.96 |
| neutral lead stearate | $Pb(OOC{\bullet}C_{17}H_{35})_2$ | 3.74 |
| *Chemical formulas obtained from *Plastics Additives Handbook, Fifth Edition,* Hanser Publishers, 2001 | | |

**EXAMPLE:**

In one year, a facility processes 20,000 lbs of PVC that contains dibasic lead phthalate. According to the MSDS, the lead content of the PVC is 2.00% by weight. Knowing this and using the corresponding factor from the table, the following calculation is done to determine the amount of dibasic lead phthalate in the PVC and how much was processed.

Percent of dibasic lead phthalate by weight: 2.00% x 1.32 = 2.64%

Pounds of dibasic lead phthalate used: 20,000 lbs x (2.64/100) = 528.00 lbs

### *OTA Assistance Services*

*The Office of Technical Assistance (OTA) provides one-on-one technical assistance on pollution prevention (P2), toxics use reduction (TUR) and compliance – as well as guidance in the form of workshops, case studies, manuals and other materials. OTA helps toxics users in Massachusetts to identify TUR/P2 opportunities within their operations and initiate planning efforts. Contact OTA at:*

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